USER MANUAL

ZX2 : ZX SERIES SERVER
Rugged Rack Mounted Workstations & Servers for Deployed Applications

Z Microsystems

Regulatory Information

1. Use the power and video cables supplied with the product to help prevent interference with radio and television reception. The use of cables and adapters may cause interference with electronic equipment in the vicinity of this unit.

2. This equipment has been designed to meet severe conditions in military environments as specified in MIL-STD-810G, MIL-STD-461F and DO-160F.

3. This equipment is designed to meet the limits for Class A digital devices imposed by Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when equipment is operating in commercial environments. This equipment generates, uses and can radiate radio frequency energy, and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

4. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense. Changes or modifications not expressly approved by Z Microsystems could void user's authority to operate the equipment.
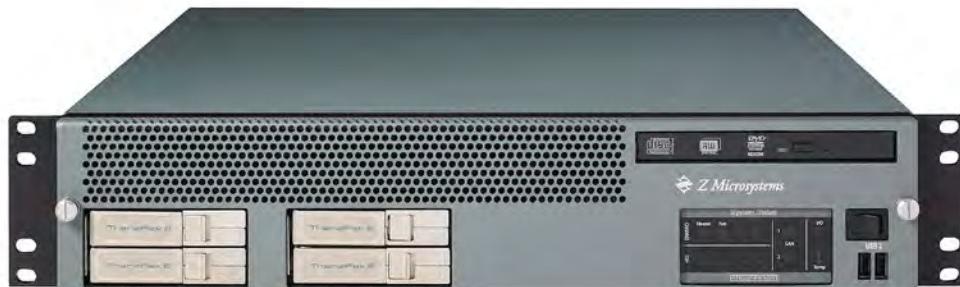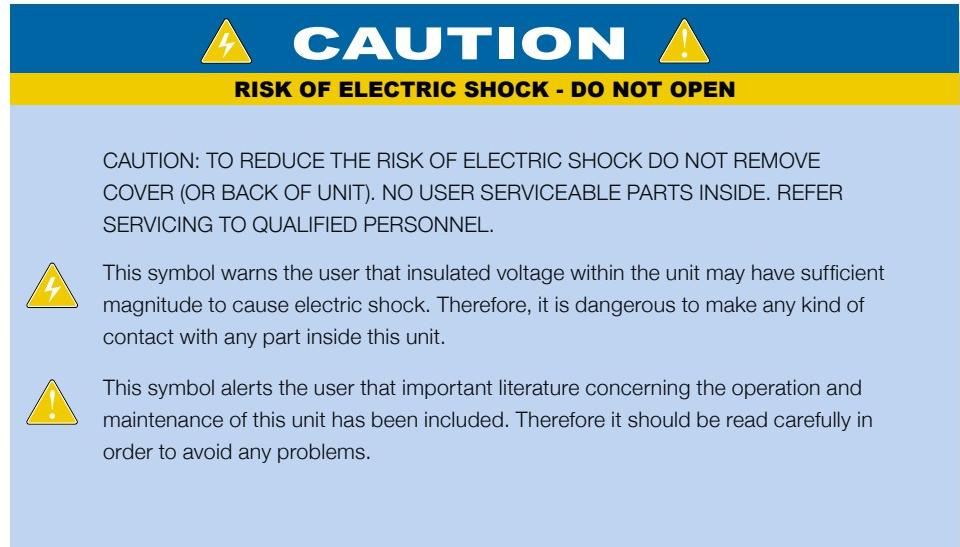
ZX2
ZX Series Server

Table of Contents

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1.0 PRODUCT OVERVIEW

This section will provide information and assistance with the following topics:

• About This Manual

• Product Overview

1.1 ABOUT THIS MANUAL

This product manual will help you through the installation, setup, and operation of your ZX2 Server. We recommend you read this manual carefully and follow the instructions in the installation chapter for verification of system functions and control settings.

This manual is also available on the Z Microsystems website at **www.zmicro.com**. For further assistance please visit the Frequently Asked Questions section in the manual, or refer to the section dedicated to Customer Support.

For added convenience and safety, you will find embedded visual cues for quick tips, warnings, new sections, and safety precautions. These are intended for quick supplemental reference and added ease in the installation and operation of the ZX2 Server.

Warnings and Caution Alerts

Notes and Preparation Information

New Section

Necessary Tools

Necessary Hardware

SAFETY PRECAUTIONS

DANGER:

To avoid shock hazard:

• Do not remove the covers around the ZX2 Server.

• Do not connect or disconnect the ZX2 Server during an electrical storm.

• The power cord plug must be connected to a properly wired and grounded power outlet.

• Any equipment to which the ZX2 Server will be attached must also be connected to properly wired and grounded power outlets.

Additional Assistance for the ZX2: ZX Series Server, or other server configurations can be found on the Z Microsystem's website along with highly customizable integration options for a wide range of platforms and applications.

1.2 Product Description

ZX2
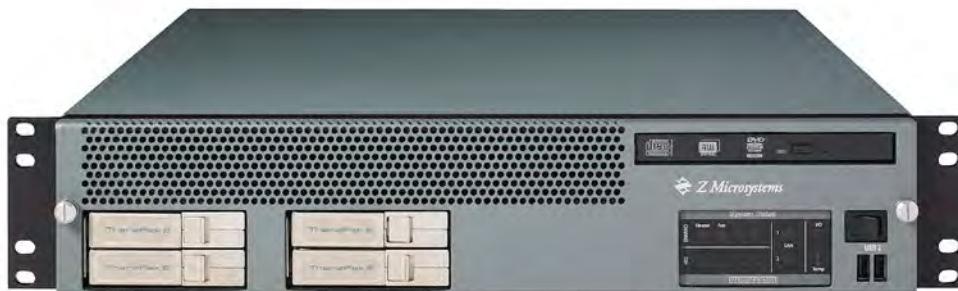
The ZX2 Station is a low–profile, rack mountable, computing and graphics processing powerhouse. At only 3.45" (2U) high by 20 inches deep, this compact, lightweight, rugged workstation gives back valuable rack space and delivers a flexible and high–performance computing solution for demanding mission–ready applications.

The ZX2 Station integrates the latest computing technology with a system architecture supporting any of the extended ATX form-factor motherboards with support for up to six rugged hot–pluggable TP2 removable drives, a slim-line DVD-RW, and an environmental control board to support proper thermal regulation. User–friendly features include a front accessible power switch, two front accessible USB ports for rapid connectivity, and a quick release top access cover for ease of service and hardware installation.

Optimized for rugged conditions, the ZX2 hosts innovative PCI card hold–down brackets that secure cards in all three axis (X/Y/Z). In addition, the front panel provides a filtered dust door with a systems status display to quickly monitor the status of the rugged server. Dual redundant 650W AC power supplies insure minimal system down time with fail-over support while supporting the power requirements of the latest multi-core processors and high-end PCI Express graphics cards.

Z Microsystems' engineers are experts in the design of systems that reduce the risk, cost and failure caused by harsh environmental conditions. Designed to exceed MIL-STD 167 for vibration and MIL-STD 461 for EMI, ZX2 Stations are a robust solution for hostile, field–ready applications. Other enhanced options such as EMI filtered power supplies with MIL-Circular connectors, locking security panels, environmental cooling unit (ECU) are available. For more information contact your local Z Microsystems' Sales Representative.

Highlights

- Supports latest Intel Quad Core Xeon & AMD Quad Core Opteron processors
- 650W dual redundant AC power supply, or 750W fixed DC power
- 19" rack mountable
- Only 20 inches deep
- Slim 2U (3.45") height
- 3 PCI expansion slots

- Ultra–secure PCI card brackets
- Lightweight rugged packaging
- Up to 6 rugged removable SATA or SAS TranzPak2 HDDs
- Slim DVD-RW and front accessible USB slots
- Environmental control board with status display

2.0 SETUP

This section will provide information and assistance with the following topics:

• ZX2 Assembly parts

• ZX2 Cable Connections Outline

• ZX2 Connection Setup

2.1 SHIPMENT CONTENTS

Ensure all of the following parts are included in the package received from Z Microsystems. Verify all parts have not been damaged during shipment. If any of the parts are missing or damaged, immediately contact Z Microsystems Customer Service at 858-831-7040.

• ZX2 Station

• Power Cable(s) (May be standard IEC or MIL-Connect AC or DC option)

• Installation Guide
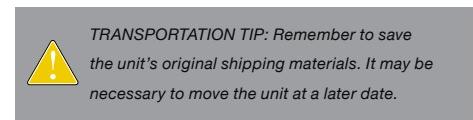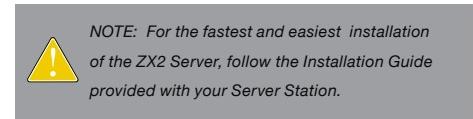
2.2 INSTALLING THE ZX2 STATION IN A RACK

For rail installation instructions please refer to the Installation Guide that is included with your ZX Series Server. This guide will contain steps for mounting and installing the ZX Server with sliding guide rails and other custom rack features. Hardware specifications may vary based on ZX series and rack depth.

If the procedure outlined in the included installation guide does not work for your particular configuration or was not included in your ZX product packaging, please contact for documentation assistance at **(858) 831-7039** or you can email us at **ZDoc@zmicro.com**.

WARNING

Using assembly hardware that does not match specifications may damage internal components.

NOTE: For the fastest and easiest installation of the ZX2 Server, follow the Installation Guide provided with your Server Station.

TRANSPORTATION TIP: Remember to save the unit's original shipping materials. It may be necessary to move the unit at a later date.

2.3 ZX2 CONNECTIONS GUIDE

Preparations

In preparation to setting up and connecting the ZX2, turn off the electrical power to your computer.

Required Cables/Connectors
- Power Supply Cable (AC or DC option)
- Video Signal Cable (DVI, BNC)
- Serial I/O Connector (USB Type B-A)

Shown here are typical customer specific examples.

MOUSE PORT

AC/DC POWER CONNECTORS

PRINTER PORT

KEYBOARD PORT

USB 2.0 PORTS

MONITOR PORT

NETWORK ETHERNET PORT

AUDIO PORTS
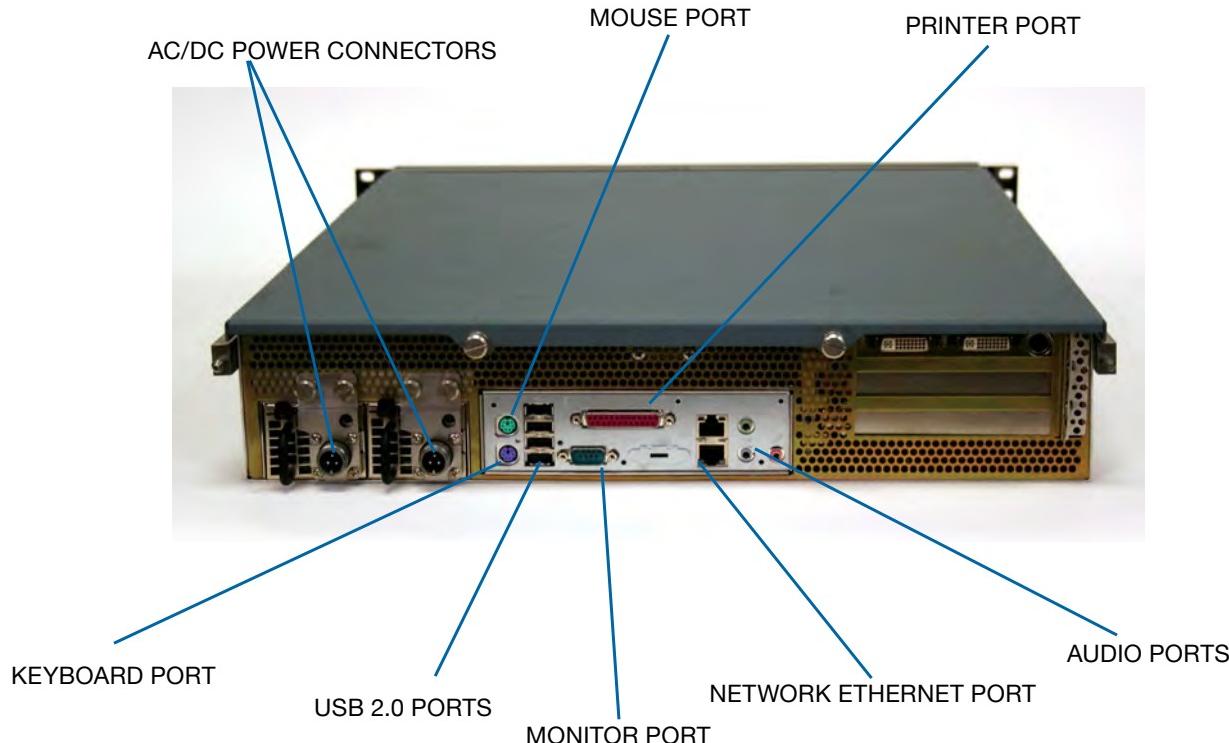
**Other ZX2 Server configurations available. Above is a sample configuration with a Supermicro X7DA8 motherboard and dual redundant military power supplies with EMI filter.

ZX2 POWER SUPPLY OPTIONS

Multiple power supply configurations are available for Z Microsystem's ZX2 Server Stations. A typical dual-redundant removeable AC power supply jack is pictured in the full ZX2 configuration above. If needed, a single, fixed DC power supply may be purchased. Contact your Z Microsystems Sales Representative for further questions, order information, and the latest updates and technology.

Schematic outlines for AC/DC power supply configurations can be found in section 8.2.2 of the Appendix.

DC Power Configuration
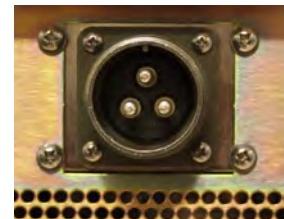
Dual Redundant AC Power Configuration

3.0 CONFIGURING YOUR ZX2 STATION

This section will provide information and assistance with the following topics:

- Updating ZX2 modules and configurations
- Removing/Re-installing Lockable Face Plate Cover
- Removing/Re-installing ZX2 Top Cover
- Changing/Re-installing a PCI card
- Removing/Re-installing a Power Supply Module

Preparations

In preparation to any configurations change to the ZX2, turn off the electrical power to the ZX2 serve and your computer.

Required Tools

- Philips Screwdriver

3.1 REMOVING TOP COVER OF ZX2 STATION
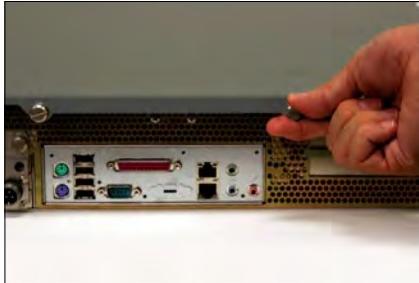
1. Loosen both lock screws at the rear of the unit.

2. Using one thumb push slightly down on the front edge of the top and the other hand to pull the top from the rear or the unit.

3. Pull the top back to clear the side tongues from the grooves in the casing and lift the top away.

3.2 REMOVING/INSTALLING MEMORY DIMM

1. Each of the Memory DIMM slots is equipped with locking latches to secure the Memory DIMM in place.

2. Use your fingers to push the locking latches away from the existing Memory DIMM. Gently remove the Memory DIMM from its slot

3. Install the new Memory DIMM by carefully aligning the Memory DIMM parallel to the slot and then gently but firmly inserting.
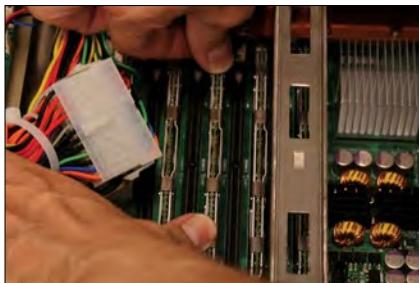
4. Carefully push the Memory DIMM in using your thumbs. Secure the Memory DIMM by pulling the locking latches towards the Memory DIMM.

3.3 CHANGING OR RE-INSTALLING A PCI CARD

1. Use a Philips screwdriver to remove the attachment screws to the small, black retainers located around the card. Remove retainers with your fingers.

2. Using a Philips screwdriver, remove the attachment screws from the card placeholder plate.
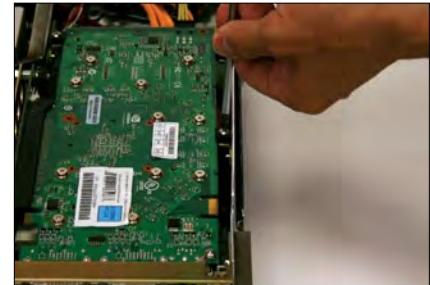
3. Carefully and gently pull the PCI card away from the unit. Be very careful not to bend or twist the card as damage may occur.
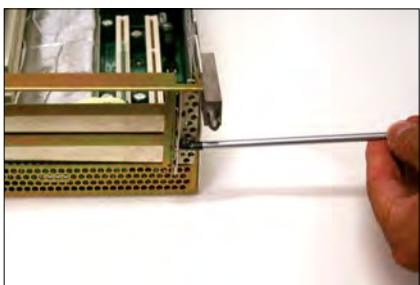

4. Using a Philips screwdriver, remove the attachment screw for the selected placeholder plate. Remove the plate and install your PCI card.

5. After installing and securing your other PCI card, carefully reposition the existing PCI card back into its former location.
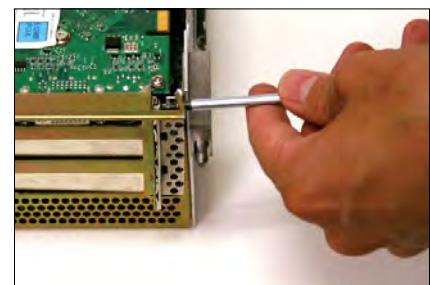
6. Re-attach the PCI card to the card placeholder plate. Restore and attach the black retainers from Step 1, above to the sides of the card.

3.4 RE-INSTALLING TOP COVER OF ZX2 STATION

1. Place cover loosely onto ZX2 station. When placed on the station, make sure your side flanges properly align with the corresponding slots.

2. Using one thumb push slightly down on the front edge of the top and the other hand to push the top cover from the rear or the unit.
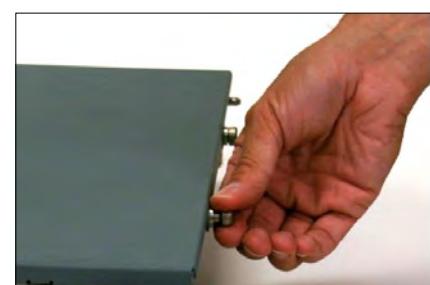
3. When the top is firmly seated onto the station casing, turn the attachment screws at the rear of the top cover to secure .

3.5 REMOVING A POWER SUPPLY MODULE

⚠️ NOTE: If one of the power supply modules is removed, then the system will still operation with only one remaining power supply.

⚡ WARNING: A failed power supply will be identified by an audible alarm.

1. Using a Flathead screwdriver, remove both screws from the rear top plate of the Power Supply module

2. Insert a finger into the handle and begin to pull the module from the station.

3. Gently but firmly continue to pull the Power Supply module out of the ZX2station.

4. When the Power Supply module is fairly extracted, lift and support the module away of the ZX2 station.

3.6 INSTALLING A NEW POWER SUPPLY MODULE

⚠️ NOTE: Different power supply options are available. Step 3 (below) is an example of dual redundant power supplies with military connectors. Step 4 (below) is an example of dual redundant power supplies with IEC connectors.

1. Carefully position the Power Supply module to the docking bay using both hands for steady support.

2. Using your thumb positioned on the rear of the Power Supply Module, firmly push the module into the docking bay.

3. As you reach the rear face of the ZX2 station, grasp the handle with your finger to provide extra leverage for inserting the module.

4. Use a Flathead screwdriver refasten the security screws of the Power Supply module to the ZX2 station.

3.7 REMOVING THE LOCKABLE FACE PLATE COVER

1. Using the provided key, turn to the right to unlock the face plate cover.

2. Using a Flathead screwdriver, release the attachment screws on either side of the face plate cover.

3. Pull the right side of the face plate cover away from the right support bracket.

4. Slide the face place cover away and towards the right from the left side support bracket.

> ⚠️ NOTE: The Lockable Face Plate Cover is an option available only to certain models.

3.8 INSTALLING THE LOCKABLE FACE PLATE COVER
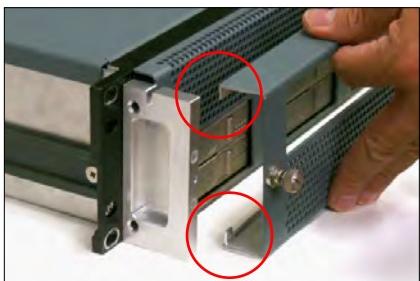
1. The face plate cover has small flanges on the left side that perfectly fit within corresponding slots on the left support bracket.
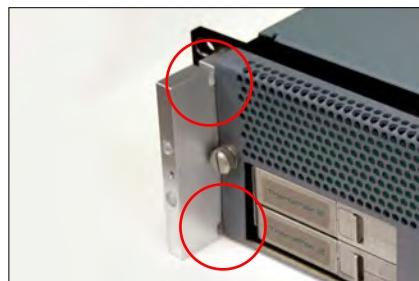
2. The corresponding slots on the support bracket are displayed above.

3. Align the flanges on the left side of the face plate cover with their corresponding slots on the left support bracket.

4. When the left flanges are secured in the support bracket, position the right side of the face flat cover onto its corresponding support bracket.

5. When both sides are secured onto their respective support brackets, turn the key to lock the face plate cover.

4.0 OPERATIONS

This section will provide information and assistance with the following topics:

• Powering up the ZX2 Station

• ZX2 Status Information & Indicators

• Inserting & Removing Tranzpak2 Storage Modules

4.1 POWERING ON THE ZX2 STATION

1. To power up the ZX2, press and hold (about 1 second) the Power Supply Switch at the center right side of the unit.

2. The display may possibly indicate items that require attention. If such is the case, please refer to the "Troubleshooting" in the Appendix.

## 4.2 ZX2 STATUS INFORMATION & INDICATORS

The ZX2 features status lights to effectively monitor the activities of the product:

Fan LED – (LED with "Fan" text and fan symbol)

1. Green = system fans are running normally

2. Amber = one or more system fans is malfunctioning

3. RED = all system fans are malfunctioning or system fans are not installed

Power On LED

1. Amber = 5V standby available, system is in standby (meaning OFF) mode.

2. Green = system is ON.

3. OFF = system is not connected to an AC power source
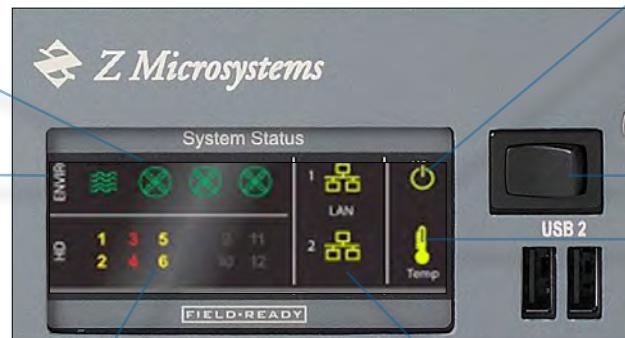
Power Switch

OT (Over Temp) LED

1. OFF = system temperature is normal

2. Red = system temperature is reaching critical condition. User intervention is needed.

HD LEDs

1. OFF = No hard drive activity or no hard drive connected
2. Blinking amber = Indicates hard drive activity

LAN LED 1 and 2

1. Blinking green = LAN port is connected and functioning normally
2. OFF = LAN port is not connected and/or disabled

HEATER LED
1. RESERVED – Only in use for systems with optional heater

4.3 REMOVING THE TRANZPAK2 STORAGE MODULE
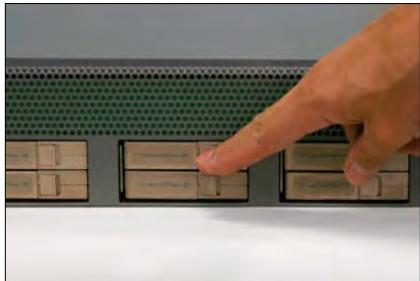
1. Slide the locking catch towards the right to allow the locking handle to spring open.
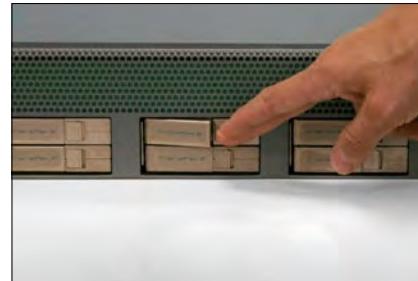
2. The locking handle will swing out.
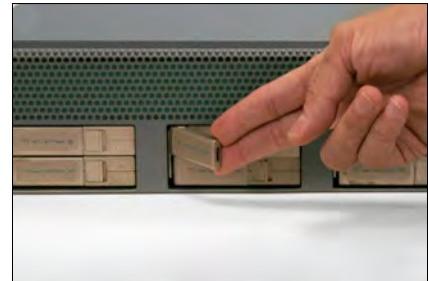
3. Push the locking handle to the left. This will disconnect the TranzPak2 from the rear connector.

4. Gently but firmly begin to pull the TranzPak2 module out as it slides off the grounding contacts.
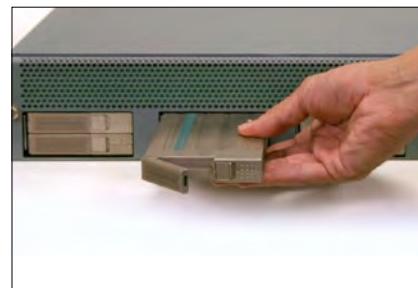
5. When the TranzPak2 module is fairly extracted, lift and support the module away from the ZX2.

4.4 INSERTING THE TRANZPAK2 STORAGE MODULE
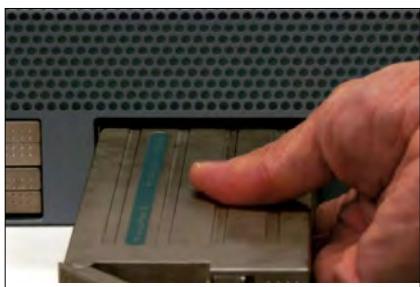
1. Raise the TranzPak2 module to the slot. and insert into the docking bay .

2. Use your thumb to gently push on the TranzPak2 thumb plate until the module is seated against the rear connector.
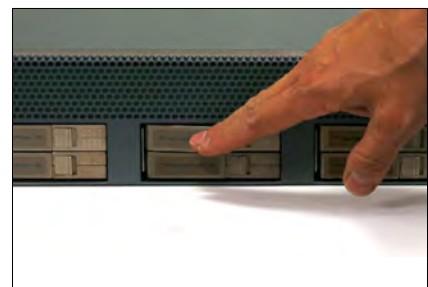
3. Press the locking handle until it snaps into place.

5.0 MAINTENANCE

This section will provide information and assistance with the following topics:

• Cleaning the ZX2 Server

• Replacing the ZX2 Air Filter

5.1 CLEANING THE ZX2 SERVER

Unplug the ZX2 server from the power outlet before cleaning.

• To clean the surface of the ZX2, lightly dampen a soft, clean cloth with water or mild detergent and wipe the surface gently.

> *CAUTION: Do not use benzene, thinner, ammonia or any volatile substance to clean the server housing. These chemicals may damage the unit.*

WARNING

Be sure to turn off the power before you perform any maintenance on the server.

WARNING

It is recommended that users do not service the server. User maintenance is restricted to removal and installation of modules and COTS parts, and to cleaning as explained below.

## 5.2 REPLACING THE ZX2 AIR FILTER

1. Remove the unit' face plate by releasing the screw on the right side of the unit. Repeat the procedure on the left side.
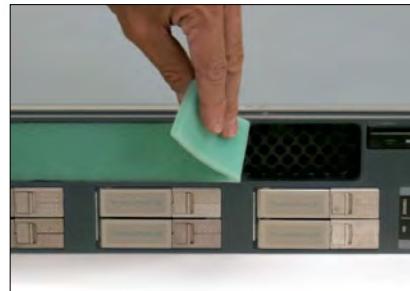
2. Remove the existing air filter strip from the unit and discard.
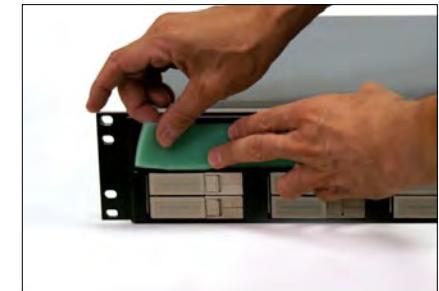
3. Install the new filter to the unit and use your fingers to press it firmly into place.

4.Reattach the face plate and tighten the screws on both sides

6.0 TROUBLESHOOTING THE ZX2 STATION

This section will provide information and assistance with the following topics:

• Troubleshooting Topics for the ZX2 Station

• Frequently Asked Questions about the ZX2 Station

Troubleshooting Topics

In the event that the ZX2 Server experiences technical problems please refer to the following troubleshooting topics for potential resolution. For our trained Z Microsystems Customer Service and Support Technicians to better serve you during this recovery stage, we recommend that you take a moment to observe and make a preliminary diagnosis so that we may expedite this process.

If the following problems occur on your ZX2 Server , follow the steps provided below.

<u>No Power to the System</u>
1. Check that the power cable is properly connected to the power supply.
2. Check that the system is receiving power. For example, take note of illuminated LED's, hear the hum of fans or other moving internal components.
3. Check that power to the power supply is engaged.
4. Check that the power source (e.g. socket, extension cord, or other source) is live and receiving power itself.
5. If none of the above resolve the problem, contact Z Microsystems' Customer Service Department.

<u>System Beeps</u>
Note the number of beeps and/or its sequence. The motherboard's user manual should contain a reference list for beep patterns and respective indications. If no motherboard documentation is available, a user manual can often be found at the manufacturer's website. Contact Z Microsystems' Customer Service Department for further assistance.

<u>Audible Alarm:</u>
An audible alarm may be sounded, indicating a failed power supply. In the event a power supply fails, replace per procedure on page 12.

Contact Us:

If these procedures do not provide solutions to the problems you are experiencing, please contact Z Microsystems Customer Service Department at **(858) 831-7040** Monday through Friday during the hours of 8:00AM - 5:00PM Pacific Standard Time. You can also email us at **techsupport@zmicro.com**.

7.0 CUSTOMER SUPPORT

⚠ *NOTE: If possible, stay by the computer. The Z Microsystems Technical Support Representative may wish to go through the problem over the telephone.*

⚠ *NOTE: More help, late-breaking news, and details of the latest accesories for Z Micro products can be found on our website at : www.zmicro.com*

Technical Support

If you are unable to correct the problem yourself, contact Z Microsystems at:

Phone: (858) 831-7040
Fax: (858) 831-7001
Website: www.zmicro.com
Email: techsupport@zmicro.com

Before calling, please have available as much of the following informationa s possible:

1. Model and serial number for the label on the monitor.

2. Purchase P.O.

3. Description of the problem

4. Computer type and model

5. System configuration (hardware fitted, etc.)

6. System BIOS version number

7. Operating System and version number

8. Display driver version number

9. Video Adapter Type

Documentation Assistance

If you are unable to find documentation for your specific product, contact Z Microsystems at:

Phone: (858) 831-7039
Email: ZDoc@zmicro.com

Customer Feedback

We value feedback on our products, their performance, problems found, and welcome all suggestions.

Please send to:

Customer Service
Z Microsystems
9820 Summers Ridge Road
San Diego, CA 92121

or www.zmicro.com

7.1 Replacing Parts for the ZX2 Station

If the Z Microsystems Technical Support Engineer determines that the product needs to be replaced, a Customer Service Representative will issue a Return Material Authorization (RMA) number.

An RMA number is required to return a product to Z Microsystems, regardless of the reason for the return.

The Z Microsystems Customer Service Department/RMA Request Form will ask the customer to provide the following information:

- model number of the defective product

- serial number of the defective product

- firmware revision (as detailed in the "Information" section of the Main Menu

- problem with the defective product

- return "ship to" address

- the name and address of the company department to which we will send the invoice (if product is out of warranty or is different from the "ship to" address.

- phone number and e-mail address of contact

- purchase order number (PO #)

You will be given an RMA number and will be asked to send the product to:

Z Microsystems
ATTN.: (RMA#) It is very important to reference the RMA#
9820 Summers Ridge Road
San Diego, CA 92121

Product Disclaimer

Z Microsystems warrants that every product is free from defects in materials, workmanship, and conforms to Z Microsystems' stringent specifications.

Z Microsystems calculates the expiration of the warranty period from the date the product is shipped. This means that the ship date on y our invoice is your product ship date unless Z Microsystems informs you otherwise. During the warranty period, Z Microsystems will provide warranty service under the type of warranty purchased for the product.

Replacement parts will assume the remaining warranty of the parts they replace. If a product does not function as warranted during the warranty period, Z Microsystems will repair or replace the part (with a product that is at minimum, functionally equivalent) without charge.

If the product is transferred to another user, the warranty service is available to that user for the remainder of the warranty period.

Z Microsystems' warranties are voided if the covered product is damaged due to an accident or abuse. The warranty is voided if the product is shipped with insufficient package protection.

Under no circumstances is Z Microsystems liable for any of the following:

　　　1. Third-party claims against you for losses or damages.

　　　2. Loss of, or damage to, your records or data.

　　　3. Economic consequential damages (including lost profits or savings) or incidental damages, even if Z
　　　　Microsystems is informed of the possibility.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specfic legal rights and you may also have other rights that vary from jurisdiction to jurisdiction.

Warranty does not take effect until full payment is received by Z Microsystems.

8.0 APPENDIX

8.1 TECHNICAL SPECIFICATIONS FOR THE ZX2 STATION

The ZX Series Servers are meticulously engineered to be adaptable and suited for an array of field operations and applications. These are standard ZX Series specifications. Other configurations may cause specifications to vary.

System Capacities

Up to 6 TranzPak 2 storage modules, SATA or SAS drives available

Up to 96GB of system memory depending on the motherboard of choice

Power Supply

Dual Redundant AC Power Supply w/ standard EMI filter | Fixed DC Power Supply w/ Optional EMI filter

Total Output Power: 650W max AC power | 750W max DC power

AC Input Range: 90-264V AC

Input Frequency: 47-63Hz, 400Hz

24V DC Supply Option

DC Input Range: 18V – 36V

Max Input Current: 35A

Physical

Total Size	3.45"H x 17.14"W x 20.00"D (inside rack)
Total Weight	Approximately 35 lbs.
Storage Option	SATA or SAS

Environmental

Operating Temp	0° to 50° Celsius
Non-Op Temp	-40° to +70° Celsius
Op Humidity	Up to 95% relative humidity per MIL-STD-801F section 507.4 (optional conformal coated boards required)
	Up to 95% relative humidity per MIL-STD-810F section 507.4 for 48 hours with non-conformal coated boards.
Operating Altitude	Up to 10,000 ft.
Non-Op Altitude	Up to 40,000 ft.
Vibration	Constant 0.5g's from 5 to 50Hz per MIL-STD-167-1
Operating Shock	40g's, 11ms, 1/2 sine in X-Y-Z axis per MIL-STD-801F Section 516.5
EMI	CENELEC 55022
	MIL-STD-461E: CE102, RE 102, CS101, CS114, CS115,CS116 (NOTE: Properly shield cables required)
Fungus	Non Nutrients / contaminants

Reliability

Operating Life	10 Years
Maintainability	< 20 minutes at line replaceable unit (LRU) level

Regulatory

Safety	UL 60950 used as a guideline

Quality/Workmanship

IPC / ISO 9001:2008 and applicable section of MIL-HDBK-454

MIL-SPEC

Additional extended range environmental military specifications can be met with optional enhancements. See your Z Micro representative for details.

# 8.2 MECHANICAL OUTLINES FOR THE ZX2 STATION

8.2.1 ZX2 STATION

17.61

TOP VIEW

.97   1.13

20.00

SIDE VIEW
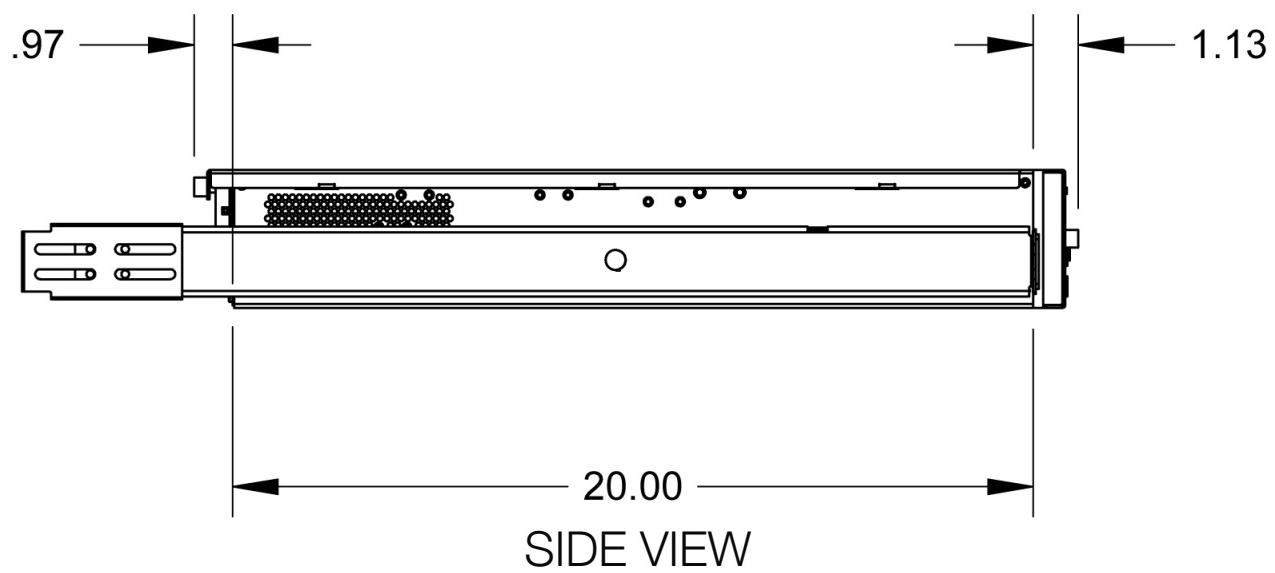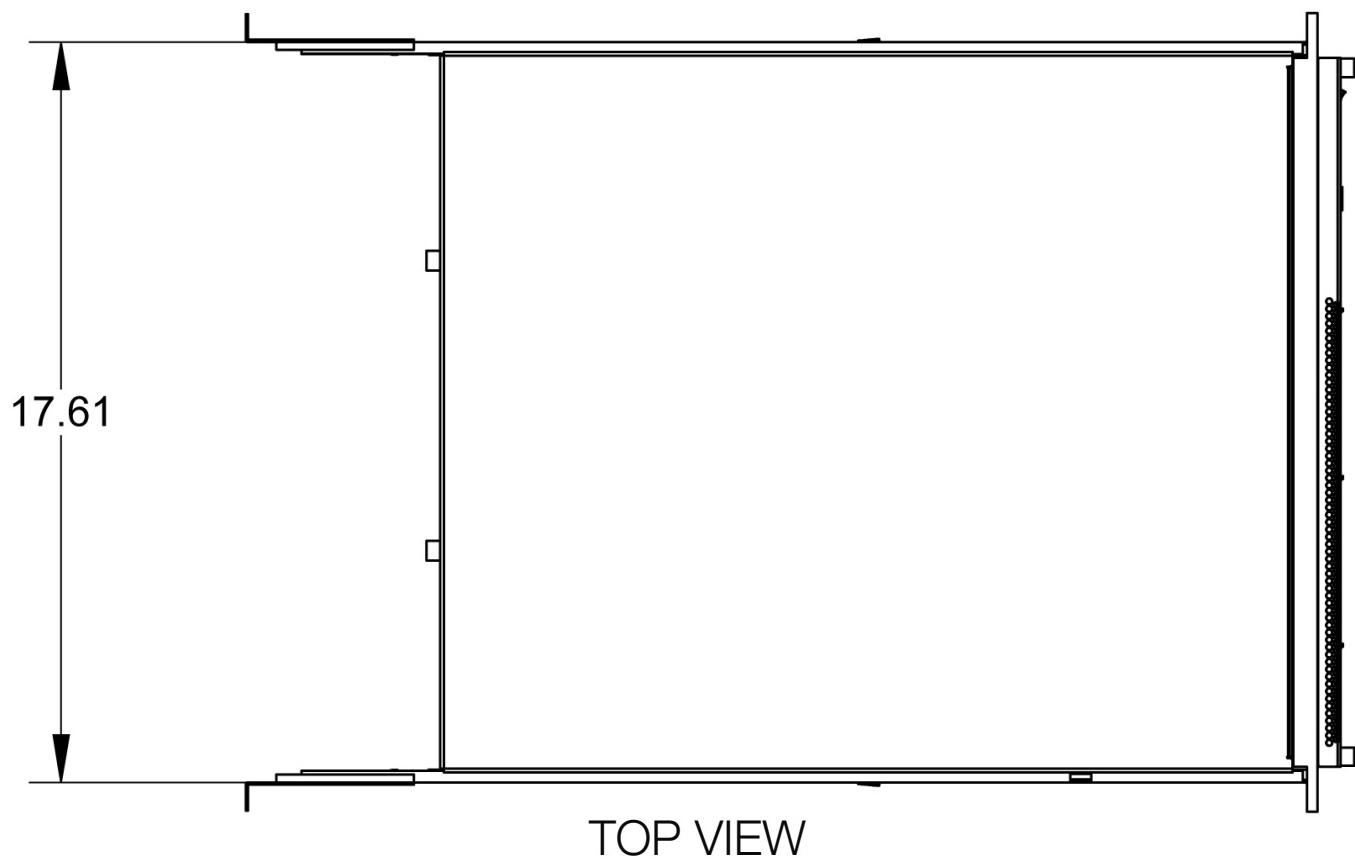
8.2.1 ZX2 STATION (FRONT PANEL)

3.45

18.3

19.00

0
.859
2.609
3.234
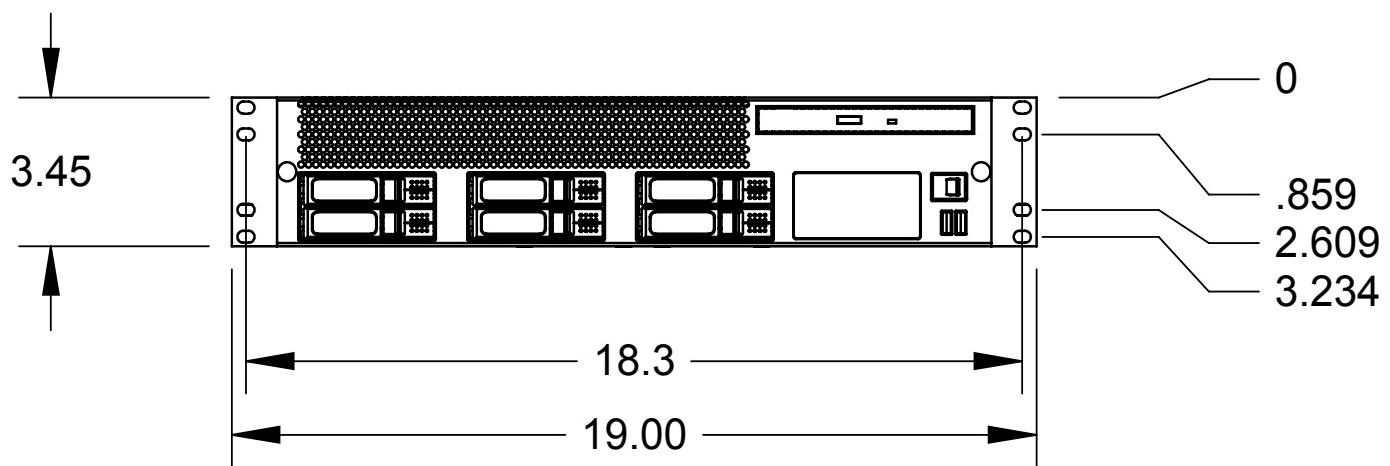
8.2.2 ZX2 STATION - REAR VIEW (AC/DC POWER SUPPLY)

DUAL REDUNDANT AC POWER

3.5
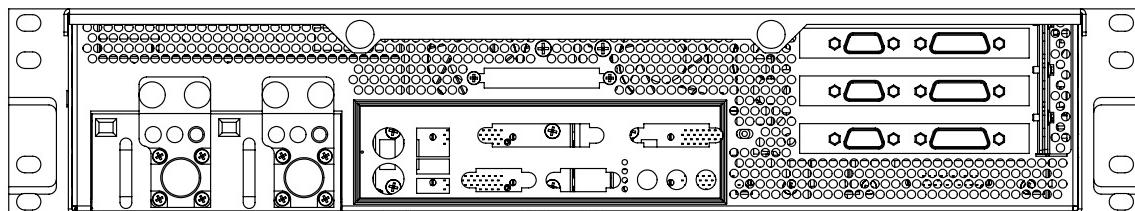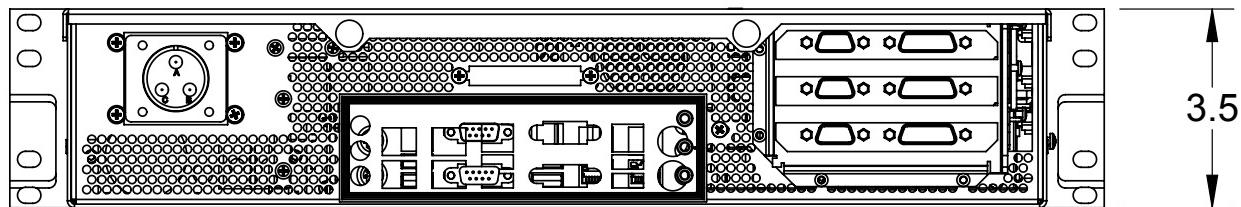
SINGLE DC POWER SUPPLY

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